Flash Research Assignment: Virtualization and Cloud Computing

You are the CTA for a small but rapidly growing manufacturing company. You have approximately 1,000 servers in your datacenter. The average server costs $8,000 to purchase (including system software). You also spend approximately $2,000 per year per server for hardware maintenance, software maintenance, technical support, power and cooling.

You believe that there are considerable opportunities for savings by utilizing virtualization to consolidate server workloads. You believe that 80% of your servers could run as virtual machines under VMware and that, on average, you could consolidate 10 physical servers onto a single virtual machine server. These would be higher end servers costing approximately $16,000 each (including system software). In addition, they will cost more to run, approximately $3,000 (each server) per year for hardware maintenance, software maintenance, technical support, power and cooling.

Prepare a paper for the CIO that describes virtualization and focuses on the benefits of server consolidation. Describe the business case for making investments in this technology. This organization always looks at investments over a 3-year period. Assume that you are at the start of a hardware refresh cycle and you will be replacing all 1,000 servers in the next year.

The maximum length of the body of this paper is 1 page. Additional pages may be used for optional diagrams and required references.

By utilizing virtualization to consolidate server workloads our company will see a $9.2 million net benefit over a three-year term. Virtualization allows 80 % of our traditional servers to be consolidated reducing the number of our physical servers from 1,000 to 280.

Transitioning to virtualization of servers allows for consolidation of 10 physical servers onto a single virtual machine. This 10:1 consolidation rate leaves our company with 80 servers with virtualization capabilities and 200 traditional servers reducing overall physical server count from 1,000 to 280. Not only is cost reduced due to the decreased need for maintenance but virtualization also allows for the dedication of server functions to be better allocated. Traditional physical servers use only 5-15% of their hardware's capabilities however, by virtualizing the server "that server can be sliced into various virtual machines. The full capabilities are then allocated to the virtual machines as needed" (Database Virtualization: The Next Wave of Virtualization). Virtualization increases a server's hardware utilization to up to 80%. Additionally, virtual machines run more efficiently because of their dynamic allocation of resources, ultimately increasing availability and company uptime. For example, if a particular virtual machine needs more of a resource, such as memory, this can be detected and addressed quickly. If a similar situation were to occur in a traditional sever, the problem may result in downtime and the loss of data.

Through the virtualization of our servers our company would experience a three-year net benefit of $9.2 million dollars. Currently, we have 1,000 traditional physical servers in our datacenter. In total, every three years, we spend $14 million on physical server replacement and maintenance. By virtualizing 80% of our servers we cut down the use of traditional servers from 1,000 to 200. This reduces costs from $14 million to $4.8 billion over a three-year cycle resulting in a $4.8 million three-year benefit and $9.2 million three-year net benefit.

As Is 3 Year Analysis				
	Year 1	Year 2	Year 3	Total
Physical Server Initial Cost (1000)	$8,000,000	$0	$0	$8,000,000
Physical Server Maintenance Cost	$2,000,000	$2,000,000	$2,000,000	$6,000,000
			Net Cost	***$14,000,000***

To-Be 3 Year Analysis				
	Year 1	Year 2	Year 3	Total
Physical Server Initial Cost (200)	$1,600,000	$0	$0	$1,600,000
VMware Server Initial Cost (80)	$1,280,000	$0	$0	$1,280,000
Physical Server Maintenance Cost	$400,000	$400,000	$400,000	$1,200,000
VMware Server Maintenance Cost	$240,000	$240,000	$240,000	$720,000
			Net Cost	***$4,800,000***
			To- Be Net Benefit	***$9,200,000***

References:

CDW, comp. "Server Virtualization: Decrease IT Cost and Data Center Space." *Server Virtualization: Decrease IT Cost and Data Center Space* (n.d.): n. pag. White P

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Dawson, Philip, and Nathan Hill. "Hype Cycle for Virtualization, 2014." Gartner, 23 July 2014. Web.
<http://my.gartner.com/portal/server.pt?open=512&objID=260&mode=2&PageID=3460702&resId=2806422&ref=QuickSearch&content=html>.